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(54) WRAPPERS

(71) I, ROBERT JOHN WALKER, a Citizen of the United States of America, of 2942 Linden Avenue, Berkeley, California, United States of America, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a wrapper of flexible plastics sheet material. Some forms of wrapper embodying the invention are suitable for use in the cooking, e.g. roasting, of comestibles wrapped therein.

In the roasting of comestibles such as poultry and joints of meat, retention of juices and flavour is enhanced by wrapping the product in a thin, flexible, plastics film which is impervious to moisture and gases. A problem exists in maintaining the wrapper sealed during the roasting. This problem is overcome with a wrapper now commercially available wherein a solid continuous band of inelastic bendable material, capable of assuming a dead set folded position when bent or folded, is adhesively secured along each of opposite edges of the wrapper. This enables the wrapper to be twisted, crushed or otherwise deformed along such edges to provide a closure which will remain substantially sealed throughout the roasting operation.

The most suitable type of bendable material for such purposes is metal foil, advantageously aluminium foil, but foil is quite expensive; and in the form of a solid continuous band there is substantial cost entailed because more foil is used than is necessary to obtain a tight closure seal.

According to the present invention a wrapper comprises flexible sheet material having inelastic bendable material capable of assuming a dead set folded position when bent secured to the sheet along opposite edges thereof, the bendable material along at least one of these edges being in the form of spaced apart strips extending transversely with respect to the edge to provide a closure along the edge about an article wrapped by the wrapper when the strips are intertwisted.

The wrapper may comprise a single wrapper sheet in the form of an integral sheet structure which may be a single ply or of multiple plies laminated together (not of multi-wall construction forming a tube), which has opposite substantially parallel edges. The wrapper sheet may be of any suitable flexible moisture impervious, preferably transparent, plastics material, such as polyester or nylon film, which will retain vapours and juices and resist heat when a product or products wrapped by the sheet is being cooked, for example, being roasted or baked. For other purposes the wrapper may be of a material which is less heat-resistant, such as polyethylene. Preferably, adjacent each of the opposite edges of the sheet are spaced apart strips of inelastic bendable material, such as aluminium foil, capable of assuming a dead set position when folded or bent. These strips provide means for twist closing both the wrapper edges about a comestible, such as a joint for roasting to maintain a tight closure which will enhance retention of juices and flavour during a roasting or other cooking procedure. Also, the closed wrapper maintains a clean cooking environment by preventing spattering of greases in a cooking container or an oven.

The closure strips, although they extend transversely with respect to the opposite edges of the wrapper sheet, do not extend entirely across the wrapper sheet but are of comparatively short length compared to the width of the wrapper sheet. It has been found that the twist closure strips need not exceed 6 inches in length, often less than 4 inches, to obtain a tight, sealed interlock of the strips when they are intertwisted together. The spacing between the closure strips should be such that in twisting an edge of the wrapper sheet to form a closure seal, pre-gathering of the material between the strips is not necessary.

Because the closure strips are spaced apart, there is a significant saving in cost compared to the employment of continuous

[Price 25p]

bands of foil along the opposite edges of the wrapper.

Any suitable means may be employed for securing the strips to the wrapper sheet. For example, aluminium foil may be adhesively bonded to the sheet material by any suitable pressure-sensitive, hot melt, heat-activatable, or silicone base adhesive which is heat resistant and compatible with the articles to be wrapped, such as food products to be cooked.

As already indicated, preferably, the closure strips are provided along each of the opposite edges of the wrapper sheet, but in some forms of the invention a continuous band of the bendable material capable of assuming a dead set position may be applied along one edge for the purpose of enhancing interlocking of two such wrapper sheets together to provide a wrapper of increased overall width. In any event, the spaced apart bendable strips are provided along at least one edge.

The wrapper sheet may be made as individual, separate sheets which are packaged together and removable from the package one at a time. Alternatively, there may be provided a long strip of the wrapper sheet from which individual desired lengths can be severed. For example, the strip may be in the form of a roll contained in a dispensing container having a serrated edge enabling individual desired lengths to be torn from the roll.

The closure strips may be in various arrangements, as will be described in greater detail hereinafter.

Some embodiments of the invention will now be described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is an isometric view of one form of wrapper sheet and container therefor, illustrating the wrapper being dispensed from the container;

Figure 1A is a fragmentary enlarged section taken in a plane indicated by line 1A—1A in Figure 1;

Figure 2 is a fragmentary isometric view of a wrapper sheet in which the ends of closure strips of the wrapper are contiguous with the edges of the wrapper;

Figure 3 is a fragmentary isometric view of a wrapper sheet which has a continuous band of foil along one edge;

Figure 3A is a fragmentary enlarged section taken in a plane indicated by line 3A—3A in Figure 3;

Figure 4 is a fragmentary isometric view illustrating two wrapper sheets of the type shown in Figures 3 and 3A with the continuous bands along adjacent edges interlocked to provide a wrapper of increased width;

Figure 4A is a fragmentary enlarged section taken in a plane indicated by line 4A—4A in Figure 4;

Figure 5 is a fragmentary isometric view similar to Figure 4 illustrating spaced apart closure strips along adjacent edges of two wrapper sheets interlocked to increase wrapper width;

Figure 6 is a fragmentary isometric view illustrating closure strips along one edge of the wrapper arranged in oblique/perpendicular relationship;

Figure 7 is an isometric view of two wrapper sheets of the type illustrated in Figure 6 in a position wherein the oblique strips at adjacent edges extend in the same direction and are not criss-crossed prior to interfolding;

Figure 8 is a fragmentary isometric view of a modified form of wrapper sheet in which closure strips at the opposite edges extend obliquely in opposite directions;

Figure 9 is a fragmentary isometric view of adjacent wrappers of the type shown in Figure 8 adapted for interfolding with oblique strips adjacent opposite edges criss-crossing;

Figure 10 is a view similar to Figure 9 wherein one of the wrappers is reversed through 180° to illustrate an arrangement wherein the closure strips on the edges to be interfolded extend in the same oblique direction, in other words, not criss-crossing;

Figure 11 is a fragmentary isometric view of a wrapper sheet wherein the closure strips at each of opposite edges extend obliquely in the same direction;

Figures 12 and 13 are similar fragmentary isometric views, each of which illustrates that with the modification of Figure 11 the strips will not criss-cross initially even if one of the wrappers is reversed through 180°;

Figure 14 is an isometric view illustrating how a food product, such as a joint of meat, is prepared for roasting in the wrapper;

Figure 15 is an isometric view illustrating the food product completely wrapped with the respective ends of the wrapper twisted together to provide a tight closure;

Figure 16 is a sectional view illustrating flexible and dead-settable filaments or wires as the wrapper closure strips.

Referring to Figures 1 and 1A, the wrapper sheet comprises a single sheet 2 of a suitable plastics material which is flexible so as to wrap readily about a product, and which at the same time is heat resistant, and moisture and substantially vapour impervious for the purpose of retaining juices and vapours in a roasting or other cooking operation. A suitable material for such purpose is polyester or nylon film. Polyolefin film, such as polyethylene or polypropylene, is suitable for other purposes. The plastic sheet is preferably transparent or translucent so that the product being cooked can

be seen therethrough. The film thickness may vary and is not critical; however, a suitable thickness is from 0.25 to 3.0 mil.

Extending transversely with respect to each of the opposite edges 3 of the wrapper sheet are spaced apart strips 4 of flexible, inelastic material which when folded will assume a dead set folded position. Metal foil, preferably aluminium foil, adhesively bonded to the sheet 2 is most advantageous. The spaced apart strips 4 may be bonded to the sheet 2 by any suitable laminating method, including any suitable bonding medium resistant to heat and compatible with the food product to be cooked, such as a silicone base adhesive as sold by the General Electric Company of the United States of America under the trade name SR-520 in a solution in toluene, or a pressure-sensitive or heat-activatable adhesive.

Preferably, each of the strips in each row terminates short of the respective edge 3 to provide a short space 6 of about $\frac{1}{4}$ inch between the outer end of each strip and the edge 3. This facilitates placing the strips onto the sheet 2 without the necessity of obtaining accurate edge registration. However, as shown in Figure 2, the strips 4 may extend to the respective edges 3 so that their ends are flush with such edges, and may even extend beyond the edges without adversely affecting their twist closure function.

It will be noted from Figure 1 that the closure strips 4 do not extend all the way across the width of the wrapper sheet 2 but terminate considerably short of the centre line of the sheet. A suitable length of the strips is from 1 to 6 inches preferably not more than 4 inches for economy of material, and their width from $\frac{1}{8}$ to $\frac{1}{2}$ inch. The spacing between the strips should be short enough to avoid having to pre-gather material between the strips in forming the twist closures. Generally, the spacing will be from 1 to 3 inches, measured between the centre lines of the strips. The thickness of the strips is not critical, a suitable thickness being from 1.0 to 3.0 mil. An arrangement of strips $\frac{1}{4}$ inch wide by 2 inches long spaced apart at 2 inch centres with a foil thickness of 2 mil has been found to be suitable, laminated onto $\frac{1}{2}$ mil biaxially oriented polyester film. Strips 3 inches long by $\frac{1}{4}$ inch wide at 2 inch centres are also suitable, as are strips $\frac{1}{4}$ inch wide by 2 inches in length at $1\frac{1}{2}$ inch centres, with 2 mil thickness. The thicker the foil the better the closure, but this does not proportionally increase cost because, paradoxically, thinner foil is more expensive; and a saving of foil material is effected by the open spaces between the strips.

As shown in Figure 1, the wrapper sheet 2 may be in the form of a roll 7 packaged in a paperboard container 8 having a hinged cover 9 with a serrated edge 11 enabling the sheet 2 to be torn into lengths appropriate for the purpose intended.

A suitable overall width of the wrapper sheet 2 is about 18 inches for most roasting purposes, although the width may vary within a range of about 10 to about 36 inches. In utilising the wrapper sheet, for example for roasting a joint of meat, the joint is placed on the sheet as shown in Figure 14, and the edges of the wrapper transverse to the edges 3 are overlapped to form a tube around the joint. The edges 3 are then twisted to form end closures 12 as shown in Figure 15, which result in a tight closure seal by virtue of the interleaving and interlocking of the strips 4 to a dead set position.

In cases where the product to be wrapped is particularly large, it may be necessary to join two individual wrapper sheets together to provide a wrapper of increased overall width. If desired, as shown in Figure 3, the wrapper sheet may have a continuous band 13 of foil along one edge whilst the opposite edge has spaced closure strips 4 as previously described. In using such a form of wrapper sheet to increase the width, the bands 13 may be interleaved by a double J-joint, as shown in Figures 4 and 4A to provide an interlock when the bands are dead-folded together. The increased width wrapper is then utilised in the manner shown in Figures 14 and 15.

It is not essential to have a continuous band along one edge of adjacent sheets because, as shown in Figure 5, even if both edges of adjacent wrapper sheets are provided with spaced apart closure strips, they can be interlocked by interfolding adjacent edges of two wrapper sheets.

In the previously described arrangement of the closure strips 4, they extend perpendicular to the edges 3 of the wrapper sheet 2. However, the wrapper may comprise along one edge strips 14 which are obliquely arranged with reference to that edge, while the strips along the opposite edge are perpendicular thereto. The obliquely arranged strips (preferably at an angle of between 45° and 60°, although the angle is not critical), as shown in Figure 7, enhance interlocking of two wrapper sheets to increase the wrapper width; and when these two sheets are arranged with respect to each other in the manner shown in Figure 7, it will be noted that although initially the strips 14 are not in a criss-cross relationship they will be after the double J-fold is made.

Figure 8 illustrates an arrangement wherein wrapper strips 16 are obliquely arranged with respect to each of the opposite edges 3 of the wrapper sheet, but the strips along the respective edges 3 extend obliquely in

opposite directions. Sheets according to Figure 8 may also be interleaved to increase the overall wrapper width; and from Figure 9 it will be seen that in one position the wrapper strips 16 of the respective wrapper sheets are in a criss-cross relationship when such sheets are to be interlocked by double J-folds.

As can be seen from Figure 10, by reversing one of the wrapper sheets according to Figure 8 through 180°, they are not initially in a criss-cross relationship but will be after interfolding.

The closure strips may extend obliquely in the same direction along the respective edges 3 of the wrapper sheet, as is shown in Figure 11; and from Figures 12 and 13 it will be noted that in any position of the wrapper sheet with respect to each other, they will not initially be in a criss-cross relationship.

The described arrangements of the closure strips illustrate the variety of arrangements that may be obtained. In principle, all arrangements of such strips function in the same way in providing a tight end closure seal of the wrapper. With respect to the obliquely arranged strips, the spacing and length are substantially the same as for strips perpendicular to the edges of the wrapper. However, the oblique arrangement of the strips may be such that the inner end of each strip overlaps the outer end of the adjacent strip, regarded perpendicularly to the edges 3, as can be seen from the typical arrangement in Figure 6.

Although strips of metal foil, desirably aluminium foil, have been found most advantageous, the closure strips may be of any other suitable, flexible material which will take a dead set when folded. Figure 16 illustrates strips in the form of bendable wire adhered to the wrapper sheet. Other alternative materials are deformable plastics or stiff fabric tapes.

Although the wrapper is particularly adapted and particularly useful in the roasting or other cooking of comestibles, it can be used for wrapping products for freezing, and for other products or groups of products where it is desired to provide an envelope about the same. When not intended for cooking uses, the wrapper material need not necessarily be moisture and vapour resistant, or translucent or transparent. Also, the wrapper may be of air-permeable material or perforated when intended for wrapping fruits or vegetables.

WHAT WE CLAIM IS:—

1. A wrapper of flexible sheet material having inelastic bendable material capable of assuming a dead set folded position when bent secured to the sheet along opposite edges thereof, the bendable material along at least one of these edges being in the form of spaced apart strips extending transversely with respect to the edge to provide a closure along the edge about an article wrapped by the wrapper when the strips are intertwisted.

2. A wrapper as claimed in Claim 1 wherein the spacing between the strips along each edge is sufficiently close to enable formation of a twist closure without having to pre-gather the sheet between the strips in forming the closure.

3. A wrapper as claimed in Claim 1 or Claim 2 wherein the strips are flat metal foil adhesively bonded to the sheet material.

4. A wrapper as claimed in Claim 3 wherein the metal foil is aluminium.

5. A wrapper as claimed in Claim 3 or Claim 4 wherein the strips are from 1 to 6 inches long, $\frac{1}{8}$ inch to $\frac{1}{2}$ inch wide, and spaced apart by from 1 to 3 inches between their centre lines.

6. A wrapper as claimed in Claim 5 wherein the strips are less than 4 inches long.

7. A wrapper as claimed in any of the preceding claims wherein the strips along at least one edge are all of substantially the same length and width.

8. A wrapper as claimed in any of the preceding claims wherein the strips along at least one edge are spaced inwardly from the edge.

9. A wrapper as claimed in any of the preceding claims wherein the strips along at least one edge are oblique to the edge.

10. A wrapper as claimed in any of Claims 1 to 8 wherein the strips along opposite edges are oblique to the respective edges.

11. A wrapper as claimed in Claim 10 wherein all the strips are oblique in the same direction.

12. A wrapper as claimed in Claim 10 wherein the strips along one edge are oblique in the opposite direction to the strips along the opposite edge.

13. A wrapper as claimed in any of Claims 1 to 8 wherein the strips along at least one edge are substantially perpendicular to the edge.

14. A wrapper as claimed in any of the preceding claims suitable for wrapping food products for cooking, the sheet material of which is a transparent plastics film resistant to food cooking temperatures and substantially impervious to liquids and vapour so as to retain flavour and juices of food products during cooking while wrapped in the wrapper.

15. A wrapper substantially as described with reference to any of Figures 1 and 1A, 2, 3 and 3A, 6, 8, 11 or 16 of the accompanying drawings.

16. A method of preparing a food product for cooking to enhance retention of juices and flavour, which comprises providing a single, self-supporting plastics film

of transparent flexible sheet material resistant to food cooking temperatures and substantially impervious to liquids and vapour so as to retain flavour and juices of the product, said film having opposite substantially parallel edges, providing spaced apart parallel closure strips secured along each of said edges and extending transversely with respect to tsuch edges, each of said strips respect to such edges, each of said strips being of inelastic bendable material capable of assuming a dead set placing the product on a wrapper as claimed in Claim 14 or Claim 15 between the said opposite edges thereof folding the wrapper around the product with opposite edge portions overlapping, and twisting edges with strips attached thereto to interlock the strips and form a tight closure seal.

KILBURN & STRODE,
Chartered Patent Agents,
Agents for the Applicant.

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1361175 COMPLETE SPECIFICATION
4 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

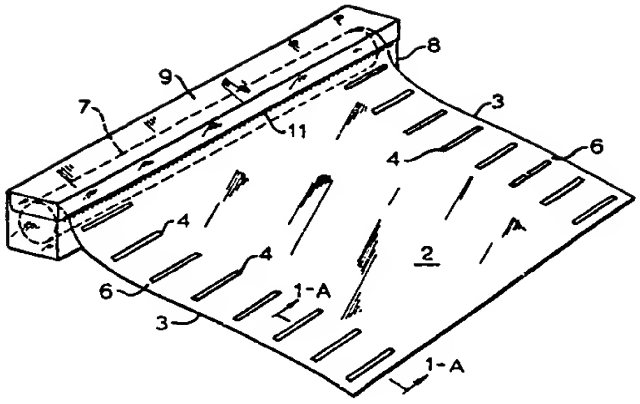


Fig. 1

Fig. 1-A

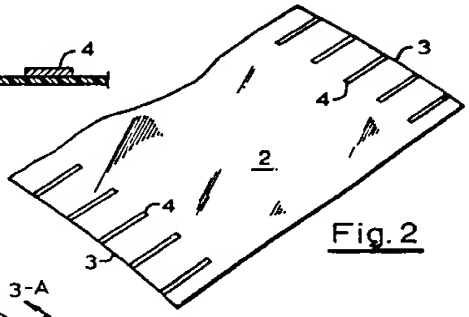
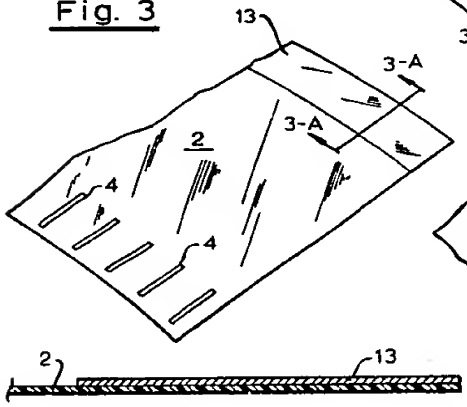


Fig. 2

Fig. 3



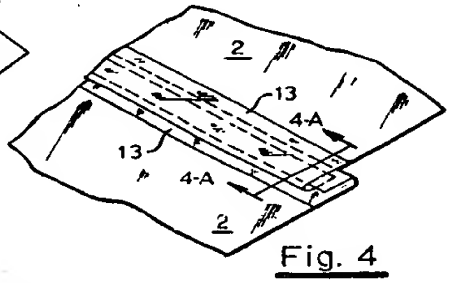
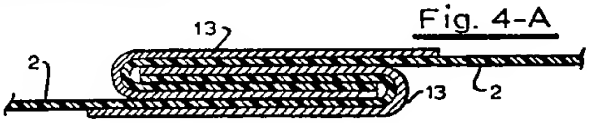


Fig. 4

Fig. 3-A

Fig. 4-A



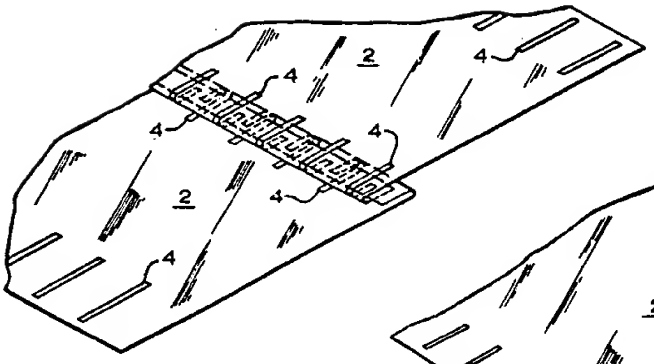


Fig. 5

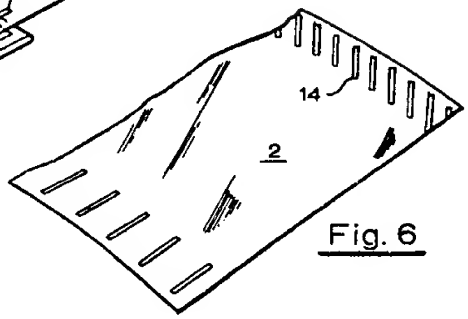


Fig. 6

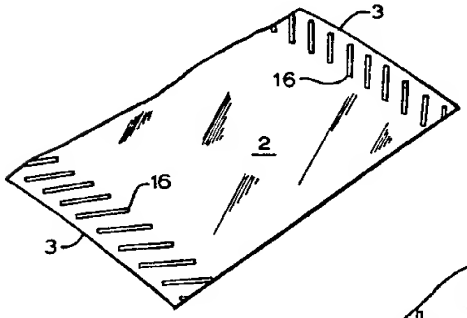


Fig. 8

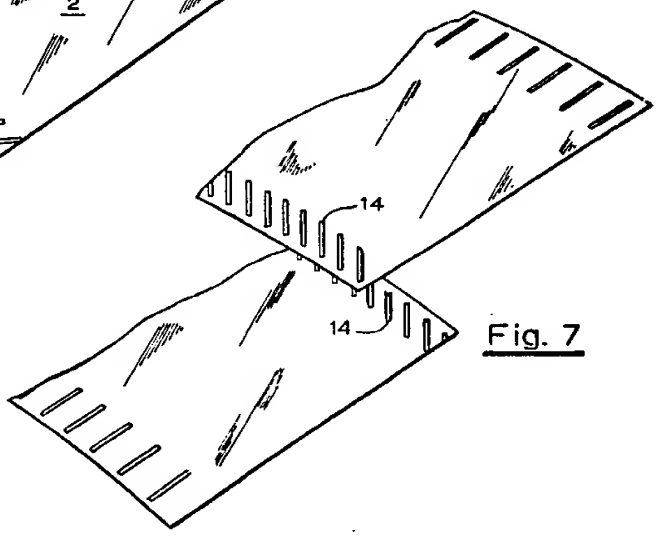


Fig. 7

1361175 COMPLETE SPECIFICATION
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Sheet 3

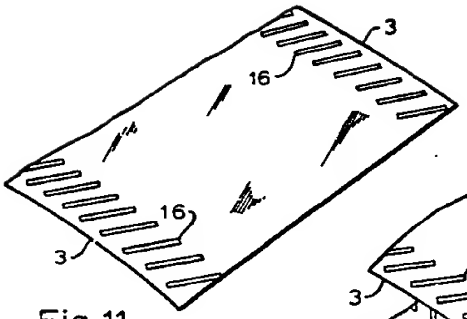

Fig. 11

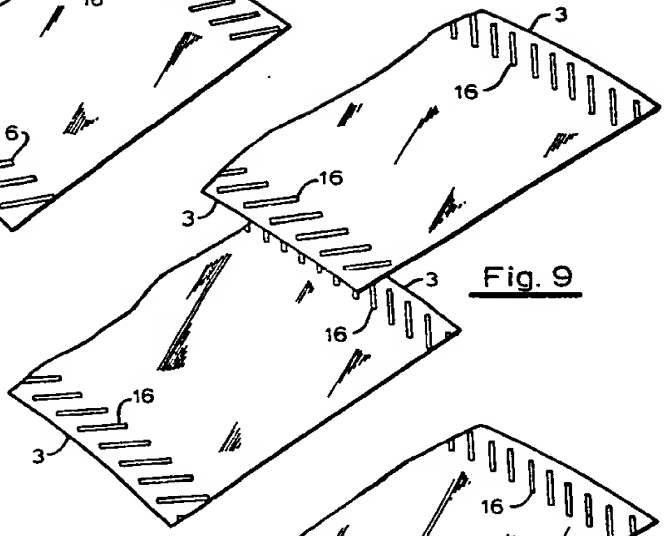

Fig. 9

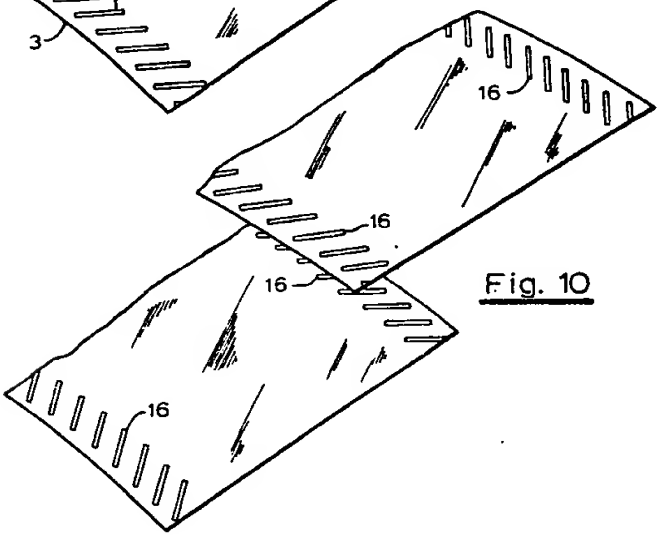

Fig. 10

Fig. 16

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Sheet 4

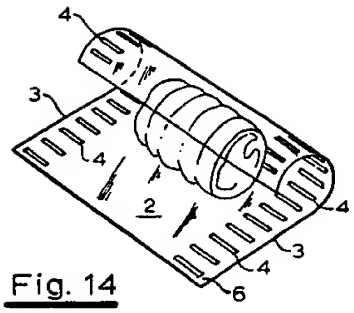

Fig. 14

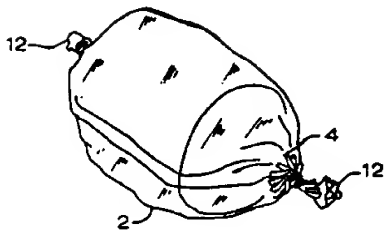

Fig. 15

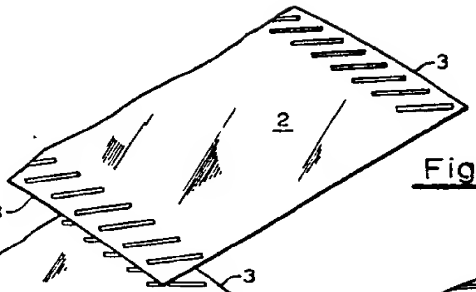

Fig. 12

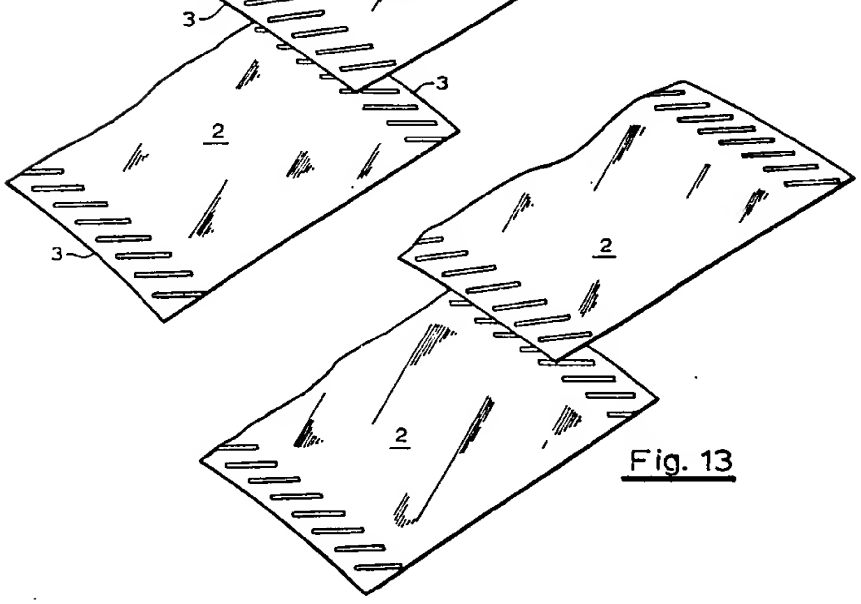

Fig. 13